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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,477	07/07/2006	Nobuyuki Matsushima	CU-4938 RJS	5871

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EXAMINER
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PATEL, VISHAL A

ART UNIT	PAPER NUMBER
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3676

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/585,477	<b>Applicant(s)</b> MATSUSHIMA ET AL.	
	<b>Examiner</b> Vishal Patel	<b>Art Unit</b> 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

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## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claims 11-12, specifically rectangular cross-sectional shape and an outer peripheral surface thereof is flat, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant’s use.

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### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 1, lines 4-8, "a cross-sectional...shape", unclear what applicant is trying to claim since applicant states the coil expander is formed into a convex curved shape. For examination purpose the claims are directed to just a wire material having a rectangular shape.

Claim 2, lines 1-4, "the wire...mm", unclear how this limitation is related to the wire material since this occurs after the wire material is formed into a coil expander. Again for examination purpose the claims are directed to just a wire material.

Claim 3, entire claim, unclear how the limitations is related to wire material since the limitations occurs after the wire material is formed into a coil expander. For examination purpose the claims are directed to just a wire material.

The above rejection also applies to claims 4-6.

Claim 8, "entire claim", how does a wire material have a piston ring that is an oil ring?

Claim 10, entire claims, a coil expander, unclear what applicant is trying to claim a wire material or a coil expander with particular shape and structure? For examination purpose the claim is directed to a coil expander with a convex curved shape.

Claim 11, lines 4-5, "the coil...flat", unclear how the coil expander has an outer peripheral surface thereof is flat and has a rectangular cross-sectional shape. As shown in figures above the coil expander has a convex curved shape. For examination purpose the coil expander has a convex curved shape.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoshi (JP. 60101247).

Hoshi discloses a coil expander formed of shape memory alloy, has a rectangular cross-sectional shape and an outer peripheral surface thereof is flat (e.g. the coil expander having a flat as much as shown and disclosed in the application). The outer surface of the coil expander has a surface. With regard to plastically processed surface is considered to be process and/or method limitation which is given no patentable weight in an apparatus claim, see MPEP 2113.

6. Claims 1-8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Goldstein et al (UE. 5,542,682).

Goldstein discloses a wire material (e.g. wire material of 30) having a cross-sectional shape thereof is a rectangular shape (e.g. figure 6, 50e or 50d or 50b).

With regard to intended use limitation: The wire material of Goldstein is capable of being used as a coil expander with convex curved shape and in a piston ring assembly (e.g. the wire material for a coil expander used for a coil expander of a combination piston ring comprising a piston ring and the coil expander for pressing and urging the piston ring outward in the radial direction thereof).

Regarding claim 2-3: This limitations only occurs when applicant has a coil expander but as noted above applicant has only claimed wire material but the reference of Goldstein teaches that the coil expander having a convex curved shape and a concave curved shape (e.g. as see in figure 3 and 5). Furthermore as shown in figure 5 and 7a-7b, the height of the convex curve is

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larger than the concave curved shape (e.g. this would be the case when a wire is formed into a coil expander).

Regarding claims 4-5: The wire material having corners that are curved (e.g. figure 50b shows this).

Regarding claims 7-8: The wire material having a side surface that is flat (e.g. figure 50d). The wire material is capable of being used in a piston ring that is an oil ring.

Regarding claim 10: A coil expander (e.g. 30) with a convex curved shape (e.g. figures 5-7b show this).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein.

Goldstein discloses the claimed invention except that the convex curve surface having a height in the range of 0.03 to 0.1 mm and a radius of curvature of the curved surface of outer periphery side surface edges, located at both ends in a width direction of the wire material is smaller than the radius of curvature of the curved surface of an outer periphery side surface mid portion located at the central portion in the width direction of the wire material. Discovering an optimum range of a result effective variable involves only routine skill in the art. In re Kulling, 895 F.2d 1147, 14 USPQ 2d 1056. Without the showing of some unexpected result. Since

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applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the height in the range of 0.03 to 1 mm and radius of curvature be smaller than a curvature at mid portion as a matter of design choice and to provide mechanical expedience for contact surface of coil expander with an oil ring. It is also noted that applicant has only claimed a wire material and not the coil expander that would or can have this structure.

9. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuyama et al (US. 6,860,485) in view of Goldstein (US. 5,542,682).

Masuyama discloses a coil expander used with an oil ring, the coil expander made of a wire material that is a shape memory alloy (e.g. 21 or 22). The coil expander having an outer peripheral surface with a convex curved shape (e.g. convex curve shape that contacts the oil ring 11 in figure a) and an inner peripheral surface with a concave curved shape (e.g. concave curved shape opposite the convex curved shape in figure a).

Regarding claim 2-12: The coil expander having the convex curved shape and the concave curved shape (e.g. figure a). The height of the convex curved shape is larger than the height of the concave curved shape (e.g. this would be the case in any coil expander as formed in figure a).

Masuyama discloses the invention substantially as claimed above but fails to disclose that the wire material used to make the coil expander having a rectangular shape or rectangular shape with curved corners. Goldstein discloses a coil expander made of wire material having a rectangular shape (e.g. 50d or 50e) or rectangular shape with curved corners (e.g. 50b). It would



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have been obvious to one having ordinary skilled in the art at the time of the invention to have the wire material of Masuyama to be rectangular shape or rectangular shape with curved corners as taught by Goldstein, since having a coil member formed from a wire with circular or rectangular or rectangular with curved corners or oval or square shape is considered to be art equivalent (e.g. figure 6).

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mercier (US. 4,114,905) in view of Masuyama (US. 6,860,485).

Mercier discloses a coil expander made of a metal material having a rectangular cross-sectional shape (e.g. figure 3) and an outer peripheral surface thereof is flat (e.g. outer peripheral surface in figure 3 that contacts 43). With regard to method limitations that the outer peripheral surface of the coil expander is *a plastically processed surface is given no patentable weight in an apparatus claim, see MPEP 2113.*

Mercier discloses the invention substantially as claimed above but fails to disclose that the coil expander is made of shape memory alloy. Masuyama discloses a coil expander made of shape memory alloy. It would have been obvious to one having ordinary skilled in the art at the time of the invention to have the coil expander of Mercier to be made of shape memory alloy as taught by Masuyama, to provide tensioning in low and high temperature environment (e.g. abstract of Masuymama).

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bush and Takizawa et al.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tomas Will can be reached on 571-272-6998. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. P./

Primary Examiner, Art Unit 3676

/Vishal Patel/

Primary Examiner, Art Unit 3676